

ATOMIC ENERGY *newsletter*®

A SERVICE FOR INDUSTRY BUSINESS ENGINEERING AND RESEARCH
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Dear Sir:

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Financing its zirconium production plant through issuing \$6 million in convertible subordinated debentures due July 1, 1976, National Research Corp., Cambridge, Mass., expects its underwriter to have the issue out this week. Paine, Webber, Jackson & Curtis, the underwriter is handling the debentures at \$100, offering a gross spread of \$3. Of the proceeds, \$3 million will be used by its subsidiary NRC Metals Corp. to construct and equip a zirconium production plant near Pensacola, Fla., under its recently-awarded USAEC contract. Balance of the proceeds will be for general corporate purposes.....Another firm, which also received an AEC zirconium contract, has now bought new manufacturing space for the operation. Last week, National Distillers Products Corp., one of the successful AEC zirconium contract bidders, bought the Ashtabula plant of Lake City Malleable, Inc., for about \$1,700,000. It plans to use the property, which includes over 170,000 square feet of plant space and 55 acres, to house its zirconium sponge and titanium sponge manufacturing facilities. (Other FINANCIAL news, p. 5 this LETTER.)

Under new contract which it has obtained from the USAEC, Technical Operations, Inc., Arlington, Mass., will provide certain operations research services for the USAEC's reactor safety program. The work will include the study of systems for scheduling multi-variable experiments to obtain data in a minimum of time, and the integration of programs, data and information from various laboratories.....Two deep mine shafts near Elliot Lake, in the Blind River area of Ontario, will be sunk by Dravo of Canada, Ltd., under contract received from Stanleigh Uranium Mining Corp., Ltd. Dravo, division of Dravo Corp., Neville Island, Pittsburgh, is also doing work in that same region for Milliken Lake Uranium Mines, Ltd. (Other CONTRACTS AWARDED, BIDS ASKED, p. 3 this LETTER.)

A nuclear products division has been formed by Superior Tube Co., Norristown, Pa., the company announced last week. The firm is a producer of small diameter tubing. In its new division, Superior will fabricate subassemblies and components used in the core of nuclear reactors. (Other BUSINESS news, p. 2 this LETTER.)

Atomic Energy of Canada, Ltd., has issued a new compilation of reports on atomic energy which it has published from April 1, 1952 to May 31, 1956. The compilation may be obtained on request to AECL at Chalk River, Ontario, Canada. (Other PUBLICATIONS, p. 4).

Nuclear reactors for high temperature reactions (up to 2500 deg. F.) appear technically feasible (on paper) and might become economically attractive, R. H. Graham, of the USAEC told the recent high temperature symposium sponsored by the University of California and Stanford Research Institute. Acetylene from natural gas, and hydrocyanic acid from methane and ammonia were examples of reactions Graham suggested. He noted that the U. S. Bureau of Mines, in its work on coal gasification, has passed process streams through electrically heated units made of possible reactor materials. Thermal efficiency of 75-85% might be attained he stated, against the 25% efficiency of nuclear power plants. (Other MEETINGS, p. 3 this LETTER.)

ATOMIC ENERGY BUSINESS NEWS...

ACCELERATED NUCLEAR POWER PROGRAM VOTED:- New legislation to accelerate building nuclear power plants has been approved by the Joint Congressional Committee on Atomic Energy, by a 14 to 0 vote, and is ready for floor action in the House and Senate. The bill authorizes the USAEC to spend \$400 million to build both large and small scale demonstration prototype nuclear reactors. The large reactors are for power plants with a generating capacity of 50,000-KW or more of electrical energy, and the bill provides that they must be located at USAEC production centers and their electricity consumed there, i.e., at Oak Ridge, Hanford, Paducah, Savannah River or Portsmouth. Location of the small reactors is left to the discretion of the USAEC. (While the bill is similar to the one proposed by Sen. Gore of Tenn., Mr. Gore had proposed that \$1 billion be spent on large scale nuclear power plants in various parts of the U.S.)

INDUSTRIAL RESEARCH REACTOR NOW OPERATING:- The first nuclear reactor for industrial research, privately financed, has now "gone critical" at Armour Research Foundation, Illinois Institute of Technology, Chicago. A "water boiler" type, the reactor was designed and built for ARF by North American Aviation's Atomics International division. Cost was \$700,000, with twenty-four industrial firms each contributing \$20,000 toward its construction and initial operation; ARF provided the remaining funds. In return, these companies will get limited specialized training of their employees; certain patent benefits; detailed technical advice; and other benefits of an extensive three-year program whose aim is the application of atomic techniques to industrial problems.

CONSTRUCTION OF WEST COAST ATOMIC FACILITIES "WELL ADVANCED" COMPANY STATES: General Electric Co., which is moving its atomic power equipment department to San Jose, Calif., is well advanced toward completing construction of engineering office space and new manufacturing plant facilities there, George White, GE's general manager of the department told a recent Pacific Coast conference of the American Institute of Electrical Engineers. Construction of the GE Vallecitos atomic laboratory is proceeding rapidly at Pleasanton, Calif., Mr. White said. Initial facilities there will include a large-size radioactive materials laboratory, a critical assemblies building with associated laboratory accessories, a nuclear test reactor, and an experimental power reactor of the boiling water type.

RAW MATERIALS...prospecting, mining, marketing...

UNITED STATES:- Denver: An industry meeting last fortnight heard from Jesse C. Johnson, the USAEC's director of raw materials, a candid appraisal of the U. S. uranium industry, and its prospects now and in the immediate future. Domestic uranium ore production, he said, now running at an annual rate of 3 million tons, may reach 6 million by Mar. 31, 1962, when the current government-guaranteed uranium procurement program runs out. A levelling off will take place in 1962, he predicted, under the extended 5-year USAEC program that will take up in 1962, when the current program stops. He also predicted that the end of production bonuses on Mar. 31, 1960 will reduce prospecting and marginal operations. He believed that by 1962 the uranium mills would be competing for ore, observing that present mining and milling operations have been planned to exhaust the available supply by the end of the present program.

Mr. Johnson explained that known domestic ore reserves are in excess of 30 million tons, and put the potential reserves in producing areas in the U. S. at another 30 million tons. The world production of uranium-238 in areas outside the Soviet Union (and its satellites) soon will be in excess of 30,000 tons annually, he stated. No figures were given for the U. S.

Baltimore, Md.:- The new \$2 million rare earth processing plant here of Rare Earths, Inc. (subsidiary of Davison Chemical) has now gone on stream. Operating under a contract from the USAEC, the plant processes low-grade monazite sand provided by the General Services Administration from its stockpile. The thorium fraction is then separated in the form of refined thorium and shipped to the USAEC. The rare earth fraction, a concentrated, highly purified double sulfate of mixed rare earths and sodium, is subsequently returned to the GSA.

CANADA:- A \$200,000 pilot plant to test different laboratory developed methods of producing uranium metal will be constructed by Eldorado Mining & Refining Co., Ltd., W. J. Bennett, Eldorado president, recently told a House of Commons committee.

CONTRACTS AWARDED & BIDS ASKED...in the nuclear field...

BIDS ASKED:- Under invitation 108-C, bids due July 16, the USAEC, Oak Ridge, Tenn., has asked for bids on 100,000-lbs. submerged arc welding composition (flux). Under invitation SCH-389, bids due July 17, the USAEC, Schenectady Operations Office, P. O. Box 1069, Schenectady, N.Y., has asked for bids on 352 electric heaters for use in a pressurized vessel.

CONTRACTS AWARDED:- Vitro Corp. of America's engineering division has received contracts from Consolidated Edison Co. of N.Y., and Babcock & Wilcox Co., covering design and engineering of major portions of the new Consolidated Edison nuclear power plant at Indian Point, N.Y. For Con Edison, Vitro will do design and drafting work covering the superheater, turbine generator, condenser, feed water and other equipment of the plant. For B&W, Vitro is working as a sub-contractor and will handle architect-engineering and design for the reactor building and building services. (B&W is designing and will construct the nuclear reactor, fuel element handling systems, and the process and auxiliary systems.)

Uranium exploration contracts have been awarded by the Defense Minerals Exploration Administration to C. M. Coleman, Fremont County, Wyo. (\$9,492); Shoni Uranium Corp., Wyo. (\$50,436); and Jintown Uranium Co., Boulder County, Colo. (\$16,000)

Contract has been awarded General Electric Co. to develop instrumentation to handle the critical temperature, pressure, and liquid level in the coolant loop of the nuclear reactors used for submarine propulsion. The work, now underway at GE's instrument department measurements laboratory, is being financed by a \$350,000 allocation from the Department of the Navy.

Teller Construction Co., Portland, Ore., with a low bid of \$232,600, has received a USAEC contract for construction of a maintenance building in the chemical processing plant area, at the national reactor testing station, Arco, Idaho.

Two 21½-ton shutters will be furnished by Baldwin-Lima-Hamilton Corp., Phila., Pa., under a recent contract award by Brookhaven National Laboratory, Upton, L.I. The shutters, for the nuclear reactor Brookhaven is building for medical research and treatment, will operate in guide tracks on opposite sides of the reactor to release or block the radiation beam into the two treatment rooms. Each shutter has the shape of a half-cylinder 15-ft. high, 4-ft. wide, and 31-inches thick at its midsection.

CONTRACT MODIFICATIONS:- Modifications have been made in the USAEC's contract with Kaiser Engineers, Oakland, Calif., under which Kaiser is designing and building the engineering test reactor at Idaho Falls, Idaho. The modifications call for design of experimental loops to be built into the reactor for tests of interest to the aircraft nuclear propulsion program. Cost of the loops is estimated at approximately \$3 million. (The reactor itself is estimated to cost \$15 million. Its core is being designed by General Electric Co., under sub-contract to Kaiser.)

MEETINGS, COURSES, CONFERENCES...on nuclear energy subjects...

MEETINGS:- A technical information meeting on the processing of unirradiated, enriched uranium is planned for Sept. 13, 14 & 15, at Oak Ridge, Tenn. Discussions will cover preparation of uranium dioxide and uranyl sulfate, scrap recovery, analytical measurements, etc. Information on admission requirements (the meeting is classified), etc., from S. R. Sapirie, USAEC, P.O. Box E, Oak Ridge, Tenn.

A paper presented by H. H. Hausner, last week, before the Swiss Assoc. for Materials Testing, in Zurich, Switzerland, covering effects of irradiation on solid materials, was the first such paper delivered by a U. S. engineer to the Assoc. Dr. Hausner is general manager of the nuclear engineering division, Penn-Texas Corp.

COURSES:- A symposium for high school and college students and faculty members is being held July 30-31 in Blacksburg, Va., sponsored by Virginia Polytechnical Institute, cooperating with Oak Ridge organizations and the USAEC. Details of the symposium, which will be on an elementary level, from: Oak Ridge Institute of Nuclear Studies, P.O. Box 117, Oak Ridge, Tenn.

Three training courses are being offered this Summer for high school science teachers, sponsored by the USAEC and the National Science Foundation. Offered at Univ. of N.M., Harvard, and Duke Universities, the courses are offered without cost, while the NSF will give each enrollee a small allowance for living expenses. About 60 teachers will receive the training this Summer, 20 at each university.

ATOMIC ENERGY PATENT & TRADE-MARK DIGEST...

PATENT GRANTS TO PRIVATE ORGANIZATIONS:- Device for isotope separation, using arc discharge method. U. S. Pat. No. 2,752,503 issued June 26, 1956 to Joseph Slepian. (Application date: Nov. 18, 1954.)

Neutron gamma-ray well logging method of examining an earth formation (through which a bore hole has been drilled) to determine whether the formation contains chlorine or oil. U. S. Pat. No. 2,752,504 issued June 26, 1956; assigned to The Texas Co., New York. (Inventor: A. S. McKay) (Application date: Feb. 15, 1952.)

Measurement of high radiation fluxes by using glass elements which become discolored by such radiations. U.S. Pat. No. 2,752,506 issued June 26, 1956; assigned to Pittsburgh Plate Glass Co., New Kensington, Pa. Inventors: J. W. Fitzgerald, G. S. Bachman, K. M. Laing. (Application date: Jan. 17, 1952.)

PATENT GRANTS TO GOVERNMENT ORGANIZATIONS:- Releasable gripper for holding an article suspended. U.S. Pat. No. 2,751,229 issued June 19, 1956; assigned to U. S. of America (USAEC). Inventor: A. B. Schultz. (Application date: Nov. 16, 1953.)

Device for plotting the trajectory of atomic particles on a contour map of a magnetic field, U. S. Pat. No. 2,751,273 issued June 19, 1956; assigned to United States of America (USAEC). Inventor: B. H. Rankin, (Application date: Oct. 7, 1952.)

Electropolisher for polishing one side of a substantially flat metal disc. U. S. Pat. No. 2,751,344 issued June 19, 1956; assigned to United States of America (USAEC). Inventors: C. A. Kleinberger, R. E. Greene, I. C. Flanders, A. R. Flynn. (Application date: June 21, 1956.)

Apparatus for measuring the flux of a nuclear reactor. U. S. Pat. No. 2,751,505 issued June 19, 1956; assigned to United States of America (USAEC). Inventor: H. L. Anderson. (Application date: Dec. 29, 1948)

Process for reducing the radioactivity of water containing trace quantities of radioactive nuclear fission products. U. S. Pat. No. 2,752,309 issued June 26, 1956; assigned to United States of America (USAEC). Inventors: A. H. Emmons, R. A. Lauderdale Jr. (Application date: April 30, 1952)

Radiation dosimeter using a solid slab of silver activated phosphate glass as the detection element. U. S. Pat. No. 2,752,505 issued June 26, 1952; assigned to United States of America (Secretary of the Navy). Inventor: C. C. Klick. (Application date: Feb. 6, 1953)

Device for determining average intensity of radioactive particle bombardment. U. S. Pat. No. 2,752,508 issued June 26, 1956; assigned to United States of America (USAEC). Inventor: G. V. Zito. (Application date: Nov. 22, 1950.)

TRADE-MARK GRANTS: Under SN-685,159, Babcock & Wilcox Co., New York, is to receive trade-mark consisting of a design and configuration which it applies to "equipment such as nuclear reactor fuel elements, heat exchange apparatus, and the like". (Principle Register.)

Under SN-685,732, Menlo Research Laboratory, Menlo Park, Calif., will receive trade-mark consisting of the word Menlolab for Geiger counters and other equipment for detection of nuclear radiation (Principle Register.)

NEW BOOKS & OTHER PUBLICATIONS...on nuclear topics...

Electromagnetically Enriched Isotopes & Mass Spectrometry; M. L. Smith, Editor. Proceedings of conference at Atomic Energy Research Establishment, Harwell, Eng., Sept. 1955. 272 pages.--Academic Press, Inc., New York 10. (\$8.00)

Elementary Nuclear Theory, by H. A. Bethe and P. Morrison. Second edition of this text contains much new material. 274 pages.--John Wiley & Sons, Inc., New York 16. (\$6.25)

Zirconium: Its Production & Properties. Prepared by staff of Northwest Electro-development Laboratory, Albany, Ore. Comprehensive publication on zirconium. 180 pages. (\$1.00).....Selected Readings in Atomic Energy; 3rd edition of this USAEC publication. (25¢)--Above two publications from Sup't. of Documents, Wash., D.C.

Progress Report, Electronic Nuclear Instrumentation Group, Servomechanisms Laboratory, M.I.T. Work of the group on developing a neutron-sensitive thermopile. No. - PB-119650. (Microfilm: \$3.60. Photostat: \$9.30.).....Potassium Iodide Fast Neutron Detector, by Bernard Brown. Work at Evans Signal Laboratory, Belmar, N.J., on developing a fast neutron scintillation detector. No. PB-119848. (Microfilm: \$1.80. Photostat: \$1.80). --Above publications from Library of Congress, Wash., D. C.

ATOMIC ENERGY FINANCIAL NEWS...

INSTRUMENT COMPANY SHOWS SALES GAIN:- Taylor Instrument Company, which had net profit of \$435,740 (\$2.31 a share) for the nine months ending April 30, off from the \$1,104,932 (\$5.32 a share) in the corresponding period a year ago, has been showing steady gains following the cutback in sales and orders when its large instrument contract for the atomic energy program was completed, Raymond E. Olson, president, points out. The company is receiving a steadily increasing rate of incoming orders, and has a satisfactory backlog, Mr. Olson states. In the nine months to April 30th, orders increased 29.3% over the same period last year, with sales down 13.6%.

FIRM IN NUCLEAR FIELD TO ACQUIRE MAJORITY HOLDING IN AIRCRAFT PARTS COMPANY:- Vitro Corp. of America, New York, industrial firm with diversified interests in nuclear energy activities, is now acquiring a majority interest in Thieblot Aircraft Co., Inc., Bethesda, Md., an engineering and manufacturing concern doing design, development and production of aircraft components. Previously, Vitro has held a large minority interest. To acquire the majority interest, Vitro will exchange 51,000 shares of authorized but unissued common stock for 204,000 shares of common stock of Thieblot Aircraft, representing holdings of Armand J. Thieblot, and others. (Vitro, traded over-the-counter, has fluctuated in a narrow range from 17 to 21 for some months, showing good resistance during the market break this past Spring.)

NEW ISSUES:- Lithium Developments, Inc., will offer through George A. Searight, underwriter, 690,000 shares of 10¢ par common stock at \$1 retail, with proceeds from 600,000 shares for exploration and general corporate purposes; the remaining 90,000 shares will be sold by stockholders. The company has uranium properties in the Beaverlodge area, Saskatchewan, and mineral claims in southwest Manitoba which it will explore for lithium minerals.

NOTES:- An intensive analysis of mutual funds, made by the staff of Forbes Magazine, financial publication, gives the investor an opportunity to make a 3-way check on such funds as Atomic Development Mutual Fund, Axe Science & Electronics, etc., which hold "atomic" situations. The analysis (Forbes, July 1, 1956), shows, statistically, (1) mutual fund performance during one of the most powerful bull markets in history (1950-1956); (2) stability of funds when market declines, using this past Spring decline as criterion; and (3) pay-out in dividends of mutual funds. A comparison of the yearly management charge and loading charge of such funds is also shown.

NEW PRODUCTS, PROCESSES & INSTRUMENTS...for nuclear lab & plant...

PRODUCTS FROM MANUFACTURERS:- Phenol C-14, said to be uniformly labeled, has now been added to this processor's list of over 150 radioactive carbon compounds. Suggested applications include as a tracer or synthetic intermediate in the study of plant and animal chemistry, and in the analysis of insecticides, medicinals, etc.-- Nuclear Instrument & Chemical Corp., Chicago 10, Ill.

PROCESSES:- Disposal of bulky combustible radioactive wastes, by carefully monitored and controlled burning in indoor incinerators, may simplify disposal problems, techniques developed at the atomic energy project of University of Calif., Los Angeles, now show. The calcined wastes, carrying 99% of radioactive material, wet and slurried with cement, are put into 55-gallon drums and dumped, at sea. As compared with previous disposal methods, before the incineration was used, the new technique has reduced sea disposals from 50 or more drums to one a year.

Flour can be irradiated by gamma rays to effectively sterilize the insect eggs and adult insects present in the flour at a cost of about 80¢ a ton, L. E. Brownell and others of the University of Michigan recently told annual meeting of the American Association of Cereal Chemists in New York. While this method is in the same cost range as chemical control methods, its great advantage is the effect on insect eggs, since chemical fumigation is not too satisfactory on insect eggs. As designed by the Univ. of Michigan researchers, the radiation facility could handle 27.2 tons of flour an hour. Estimated construction cost would be about \$38,300 and annual operating cost would be about \$42,200.

Sincerely,

The Staff,
ATOMIC ENERGY NEWSLETTER

July 10th, 1956

